

Genetics

Case studies and headlines

HUMANS

- ✳ Retro viruses have been used to insert functioning genes into defective bone-marrow
- ✳ Diabetes sufferers can be given gene therapy to control production of insulin
- ✳ Potentially, a self-destruct gene could be added to cancer cells to provide a cure

ANIMALS

- ✳ 'Pig-heart boy'
- ✳ Sheep producing alpha-1 antitrypsin in their milk — used in treating cystic fibrosis
- ✳ Anti-clotting agent made in goats' milk — licence not awarded as they couldn't prove that the benefits outweighed the risks



PLANTS

- ✳ Brazil nut gene was put into soy beans but caused nut allergy
- ✳ A type of corn producing allergies was used for animal feed — but was later found in tacos (jumps from animal feed to human food)
- ✳ Antibiotic resistant genes used in crops could get into bacteria (so if infected, we can't cure ourselves with antibiotics)
- ✳ BT corn pesticide killed the harmless Monarch butterfly

DEFINITIONS

HUMANS

SOMATIC CELL GENETIC ENGINEERING (GE) — modifying genes in an individual — doesn't affect future generations
GERM-LINE GENE THERAPY — correcting genetic disorders in the germ line of an individual — these changes are passed on to your children
ENHANCEMENT GE — individual gene therapy aimed at improvement rather than fixing a disorder
EUGENIC GE — using gene therapy to create a better race of people

ANIMALS

TRANSGENICS — creating an animal with genes from different animals
'PHARMING' — creating medicines by putting genes from one species into another
XENOTRANSPLANTS — growing human organs inside other species for transplantation

PLANTS

GENETICALLY MODIFIED CROPS — changing the genetic make-up of crops to improve yield, resistance to disease and certain pesticides etc.

Right to a child

Artificial Insemination

- ☒ Diane Blood had a baby using her dead husband's sperm, despite having no written consent
- ☒ Dutch law takes away anonymity for sperm donors, leading to sharp drop in donations
- ☒ Children born through sperm donation will be able to trace their father — after 2023
- ☒ French woman wants to have her brother's baby through AI
- ☒ Italy: AI for unmarried couples
- ☒ HFEA advises against buying sperm on the internet
- ☒ NZ professor claims 'gay gene' may be passed on by donors

In-Vitro Fertilisation

- ☒ Natalie Evans wanted to use frozen embryos without ex-partner's consent
- ☒ Baby with three mums — one sister donated the egg, another carried the baby for the third (infertile) sister
- ☒ 63 yr old has baby through IVF
- ☒ Eggs sold on the internet for IVF
- ☒ HFEA considered reducing no. of embryos implanted to one
- ☒ 62 year old Jeanine Salomone, has given birth to a child whose biological father is her brother
- ☒ Black man named legal father of twins born to white couple after his sperm was accidentally used in IVF
- ☒ "Born with two mothers" CH4 based on true story of couple whose eggs were mixed up in IVF

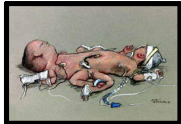
Surrogacy

- ☒ Kim Cotton was paid £6,500 to have a baby for another couple. She later did the same thing for another couple out of love.
- ☒ Twins born to their own gran
- ☒ US couple allegedly ordered surrogate mother to abort one of her twins
- ☒ Woman left infertile by hospital sues in order to finance surrogacy
- ☒ Surrogate mother sells baby over the internet to two different couples
- ☒ Surrogate mother pretends to have abortion and then keeps the baby

Right to life

Jodie/Mary

- Conjoined UK twins born in 2000 who were separated despite the Catholic parents' view that they should 'let God decide'
- Jodie survived and Mary died after the operation



Baby Theresa

- Born in Florida in 1992, a 'baby without a brain' (anencephalic).
- Parents requested that organs be used to help other babies — doctors agreed but the law said you couldn't remove organs until the donor is dead
- When she died 9 days later, her organs were in no condition to be used

CHRISTIANITY AND THE RIGHT TO LIFE

- So God created man in his own image. *Genesis*
- You knit me together in my mother's womb. *Psalms 139*
- You are God's Temple and God's spirit lives in you. *1 Corinthians*
- Human life is sacred. *Humanae Vitae*, 1968
- Life must be protected with the utmost care from the moment of conception. *Second Vatican Council*
- The unborn human being's right to live is one of the inalienable human rights. *Pope John Paul II, 1985*
- Abortion is a serious sin. Everyone, whether Catholic or not, should have a proper respect for human life... From the time that the ovum is fertilised a new life is begun which is neither that of the father or the mother. It is the life of a new human being with its own growth. It would never become human if it were not human already." *Declaration on Procured Abortion, 1974*
- Every human life, created in the divine image, is unique... *CofE 1988*
- To regard the life of the mother as less valuable than that of the unborn child does not consider her 'right to life' in terms of her wider roles of wife or mother (actual or potential) of other children, as well in terms of her own person. *Abortion, an Ethical Discussion, Church information office 1965*

Embryology

PGD

- ✳ Zain Hashmi has inherited blood disorder; mother allowed to use PGD to screen for a suitable donor
- ✳ Charlie Whitaker has life-threatening form of Anaemia; travelled to US for PGD as it was not allowed in UK
- ✳ 'PGD should be used for all IVF' claim experts
- ✳ Since 1990 1000 babies born after PGD — effects unchecked
- ✳ Screening is allowed for:
 - Huntingtons
 - Cystic Fibrosis
 - Inherited forms of cancer
 - Down's Syndrome

Stem-cell research

- ✳ Experts claim stem-cells taken from embryos can treat cancer, burns, Alzheimers, broken bones, ALS, diabetes, spinal injuries, strokes etc.
- ✳ Critics claim the adult stem cells could work just as well
- ✳ Thousands sign up as donors for international stem cell bank in Korea
- ✳ Researcher claims aborted fetuses could provide eggs for embryology
- ✳ UK woman with MS flies to Holland to be injected with stem cells
- ✳ Researchers are looking to use animal eggs as 'hosts' to grow human stem cells.
- ✳ Embryonic mice stem cells have been used to correct a genetic mutation that causes sickle cell anaemia.

Frozen Embryos

- ☒ It is estimated there are 400,000 frozen embryos in storage for IVF
- ☒ Embryo research helps improve the success rates of IVF
- ☒ UK twins born from embryos frozen for 2 years
- ☒ As of 2005, around 300 babies worldwide born from frozen embryos
- ☒ 'Frozen embryos are needlessly discarded after 5 years' claim researchers
- ☒ Israeli woman has twins from embryos frozen 12 years ago (and 12 years ago she had twins from the same batch of embryos)